

WHAT IS CLAIMED IS:

- 1 1. A system for electronic communication management comprising:
2 a contact center configured to send and receive communications;
3 a modeling engine configured to analyze received communications and
4 determine an intent of a received communication;
5 an adaptive knowledge base configured to store models; and
6 a feedback module configured to analyze responses to the received
7 communications and provide feedback to the modeling engine,
8 which uses the feedback to update the models in the adaptive
9 knowledge base.
- 1 2. The system of claim 1, wherein the contact center is configured to send
2 and receive communications via text-based communication channels.
- 1 3. The system of claim 1, wherein the contact center is configured to send
2 and receive communications via a voice-based communication channel.
- 1 4. The system of claim 1, wherein the contact center is configured to receive
2 text communications containing natural language.
- 1 5. The system of claim 4, wherein the modeling engine includes a natural
2 language processor configured to analyze the text communications to identify
3 concepts.

1 6. The system of claim 5, wherein the natural language processor performs
2 a morphological analysis of the text communications.

1 7. The system of claim 5, wherein the natural language processor performs
2 a semantic analysis of the text communications.

1 8. The system of claim 5, wherein the natural language processor includes
2 a lexical knowledge base.

1 9. The system of claim 1, further comprising an automatic response module
2 that generates the responses to the received communications.

1 10. The system of claim 1, wherein the responses to the received
2 communications are generated by agents.

1 11. The system of claim 1, wherein the contact center converts received
2 communications into a universal data model format.

1 12. The system of claim 1, further comprising an audit module that monitors
2 responses generated by agents for quality.

1 13. The system of claim 12, wherein the audit module produces an audit
2 result that is fed back to the modeling engine.

1 14. The system of claim 1, wherein each of the models in the adaptive
2 knowledge base includes an accuracy gauge that is updated by feedback.

1 15. The system of claim 14, wherein the adaptive knowledge base includes
2 models for active concepts and models for inactive concepts.

1 16. The system of claim 15, wherein the models for active concepts become
2 inactive when they have a sufficiently low accuracy rating.

1 17. The system of claim 15, wherein the models for inactive concepts become
2 active when they have a sufficiently high accuracy rating.

1 18. The system of claim 1, wherein the models in the adaptive knowledge
2 base are organized into categories and the categories are associated with
3 branches.

1 19. The system of claim 18, wherein the modeling engine modifies the
2 branches in the adaptive knowledge base using the feedback from the feedback
3 module.

1 20. The system of claim 18, wherein hierarchies of the branches in the
2 adaptive knowledge base are created manually.

1 21. The system of claim 18, wherein hierarchies of the branches in the
2 adaptive knowledge base are created automatically.

1 22. The system of claim 18, wherein the branches in the adaptive knowledge
2 base have associated rules.

1 23. The system of claim 1, wherein the modeling engine includes a statistical
2 modeler that creates the models and performs relationship algebra using the
3 models.

1 24. The system of claim 1, wherein the modeling engine automatically
2 retrieves data based on the intent of the received communication.

1 25. The system of claim 24, wherein an automatic response module
2 supported by the modeling engine generates a response to the received
3 communication using the retrieved data.

1 26. The system of claim 24, wherein an agent composes a response to the
2 received communication using the retrieved data.

1 27. The system of claim 1, wherein the modeling engine supports an
2 application specific module.

1 28. The system of claim 27, wherein the application specific module is an
2 automatic response module.

1 29. The system of claim 27, wherein the application specific module is an
2 expertise routing module.

1 30. The system of claim 27, wherein the application specific module is an
2 automatic task prioritization module.

1 31. The system of claim 27, wherein the application specific module is a
2 content filter module that filters content of agent-generated responses.

1 32. The system of claim 27, wherein the application specific module is a
2 business process automation module.

1 33. The system of claim 27, wherein the application specific module is a
2 workflow application.

1 34. The system of claim 27, wherein the application specific module is a
2 Frequently Asked Questions module.

1 35. The system of claim 27, wherein the application specific module generally
2 classifies the received communications according to content.

1 36. The system of claim 2, further comprising a digital signal processing
2 module configured to process received voice communications.

1 37. The system of claim 36, wherein the digital signal processing module
2 categorizes the received voice communications according to acoustical content
3 of the received voice communications.

1 38. The system of claim 1, wherein the feedback module is further configured
2 to support multiple feedbacks to a single received communication.

1 39. The system of claim 1, wherein the received communications include
2 documents.

1 40. The system of claim 39, wherein a statistical matching value between the
2 documents and the models is evaluated by a calculated statistical likelihood
3 value.

1 41. A method for electronic communication management, comprising the
2 steps of:
3 receiving a communication;
4 analyzing the communication to determine an intent;
5 predicting a response to the communication based on the intent,
6 producing a predicted response;
7 preparing a response to the communication, producing an actual
8 response; and
9 comparing the actual response to the predicted response to improve
10 subsequent predictions.

1 42. The method of claim 41, further comprising the step of routing the
2 communication based on semantical content of the communication.

1 43. The method of claim 41, wherein the communication is expressed in
2 natural language.

1 44. The method of claim 41, wherein the step of predicting a response to the
2 communication includes comparing the communication to a model.

1 45. The method of claim 41, wherein the step of preparing a response is
2 performed by an automatic response module.

1 46. The method of claim 41, wherein the step of preparing a response is
2 performed by an agent.

1 47. The method of claim 41, wherein the communication is a text
2 communication containing natural language.

1 48. The method of claim 47, wherein the step of analyzing the
2 communication includes morphological analysis and semantic analysis.

1 49. The method of claim 41, wherein the step of predicting a response to the
2 communication includes comparing the communication to a set of models that
3 corresponds to a category related to the intent.

1 50. The method of claim 41, wherein the step of comparing the actual
2 response and the predicted response produces feedback that is used to modify
3 a model.

1 51. The method of claim 50, where if the actual response is substantially the
2 same as the predicted response, the feedback is positive, and if the actual
3 response is substantially different from the predicted response, the feedback is
4 negative.

- 1 52. The method of claim 41, wherein the communication is a voice
2 communication expressed in natural language.
- 1 53. The method of claim 52, wherein the step of analyzing the
2 communication includes digital signal processing of the voice communication.
- 1 54. The method of claim 53, wherein the step of predicting a response to the
2 communication includes categorizing the voice communication based on
3 acoustical content of the voice communication.
- 1 55. A method for processing a relationship event, comprising the steps of:
2 receiving the relationship event;
3 analyzing the relationship event to identify concepts in the relationship
4 event;
5 building an event model of the relationship event using the concepts;
6 mapping the event model to models in a knowledge base to produce
7 category scores; and
8 routing the relationship event for action based on the category scores.

1 56. A computer-readable medium having embodied thereon a program, the
2 program being executable by a computer to perform method steps for electronic
3 communication management, the method steps comprising:
4 receiving a communication;
5 analyzing the communication to determine intent;
6 predicting a response to the communication based on the intent,
7 producing a predicted response;
8 preparing a response to the communication, producing an actual
9 response; and
10 comparing the actual response and the predicted response to improve
11 subsequent predictions.

1 57. The computer-readable medium of claim 56, wherein the step of
2 comparing the actual response and the predicted response occurs in real time.

1 58. The computer-readable medium of claim 56, wherein the step of
2 comparing the actual response and the predicted response occurs off-line.

1 59. A computer-readable medium having embodied thereon a program, the
2 program being executable by a computer to perform method steps for
3 processing a relationship event, the method steps comprising:
4 receiving the relationship event;
5 analyzing the relationship event to identify concepts in the relationship
6 event;
7 building an event model of the relationship event using the concepts;
8 mapping the event model to models in a knowledge base to produce
9 category scores; and
10 routing the relationship event for action based on the category scores.

1 60. A system for electronic communication management, comprising:
2 means for receiving a communication;
3 means for analyzing the communication to determine intent;
4 means for predicting a response to the communication based on the
5 intent, producing a predicted response;
6 means for preparing a response to the communication, producing an
7 actual response; and
8 means for comparing the actual response and the predicted response to
9 improve subsequent predictions.

1 61. A system for electronic communication management, comprising:
2 a contact center configured to send and receive communications via
3 communication channels including telephone, facsimile, electronic
4 mail, web forms, chat, and wireless;
5 a modeling engine configured to analyze a received communication to
6 determine an intent, and further configured to retrieve data related
7 to the intent;
8 an adaptive knowledge base configured to store models; and
9 a feedback module that compares a response predicted by the modeling
10 engine in conjunction with the models in the adaptive knowledge
11 base and an actual response to the received communication to
12 generate feedback, the feedback being used to update the models
13 in the adaptive knowledge base such that the system learns from
14 each received communication.

1 62. The system of claim 61, wherein the modeling engine gains knowledge
2 from communications on one communication channel and applies the
3 knowledge to communications on another communication channel.